

Claims

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1. Method of assisting at least one handover for a mobile device in a mobile communication environment with a plurality of access points, comprising the steps:

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- proactively deploying a handover decision mechanism in relation to the at least one handover and according to an operational context;

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- determining at least one new access point for the mobile device using the deployed handover decision mechanism.

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2. Method according to claim 1, *characterized in that* it further comprises the step to determine a current position of the mobile device as operational context.

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3. Method according to claim 2, *characterized in that* it further comprises the step of predicting a movement of the mobile device as operational context.

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4. Method according to claim 3, *characterized in that* the step of predicting a movement of the mobile device is related to a movement path of the mobile device.

5. Method according to claim 4, *characterized in that* the step of predicting a movement of the mobile device is

further related to a movement speed of the mobile device.

6. Method according to one of the claims 1 to 5,
5 **characterized in that** it further comprises the step of determining the operational context as a profile of applications being executed in the mobile device before or at the time of pro-active deployment of the handover decision mechanism.

10 7. Method according to claim 6, **characterized in that** the profile of applications is related to a group comprising video, still image, audio, text, and speech applications.

15 8. Method according to claim 6, **characterized in that** the profile of applications is related to a group comprising interactive, point-to-point, one-way and/or multipoint applications.

20 9. Method according to one of the claims 1 to 8, **characterized in that** it further comprises the step of determining the operational context of the mobile device as a profile of at least one mobile device
25 user.

30 10. Method according to one of the claims 1 to 9, **characterized in that** it further comprises the step of identifying at least one candidate access point as input to the handover decision mechanism.

11. Method according to claim 10, *characterized in that* the at least one candidate access point is identified using existing handover mechanisms.
- 5 12. Method according to one of the claims 10 or 11, *characterized in that* candidate access points are ranked according to dynamic criteria.
- 10 13. Method according to claim 12, *characterized in that* criteria are selected from a group comprising signal strength, bandwidth, supported applications, quality of service, network usage, power consumption.
- 15 14. Method according to one of the claims 1 to 13, *characterized in that* the handover decision mechanism is deployed in the mobile communication environment.
- 20 15. Method according to claim 14, *characterized in that* the handover decision mechanism is deployed in a sub-system of the mobile communication environment.
- 25 16. Method according to claim 14, *characterized in that* the handover decision mechanism is deployed into the access point of the mobile communication network.
- 30 17. Method according to one of the claims 1 to 16, *characterized in that* the handover decision mechanism is deployed in the mobile device.
18. Method according to one of the claims 1 to 17, *characterized in that* the handover decision mechanism

is deployed in the mobile communication environment and in the mobile device.

19. Method according to one of the claims 1 to 18,
5 *characterized in that* it further comprises the step of deploying the handover decision mechanism through transfer of code data achieving the determination of the at least one new access point for the mobile device.

10 20. Method according to one of the claims 1 to 19,
characterized in that it further comprises the step of deploying the handover decision mechanism through transfer of criteria for the at least one new access
15 point.

21. Method according to claim 20, *characterized in that* criteria are described as data structure.

20 22. Method according to one of the claims 1 to 21,
characterized in that it further comprises the step of un-deploying the handover decision mechanism when it is no more relevant.

25 23. Method according to one of the claims 1 to 22,
characterized in that the mobile device is a mobile telephone, a personal digital agent, a portable computer or a hybrid.

30 24. Method according to one of the claims 1 to 23,
characterized in that handover is achieved according

to a standard selected from a group comprising GSM, PDC, GPRS, PPP, HSCSD, WLAN, HiperLAN, IrDa, Bluetooth, IS 45, IS 95, IMT 2000.

- 5 25. Handover assisting apparatus for a mobile device in a mobile communication environment with a plurality of access points, comprising:
- 10 - a pro-active deployment unit adapted to pro-actively deploying a handover decision mechanism in relation to the at least one handover and according to an operational context.
- 15 26. Hand over assisting apparatus according to claim 25, *characterized in that* it further comprises an access point determination unit adapted to determine at least one new access point for the mobile device using the deployed handover decision mechanism.
- 20 27. Handover assisting apparatus according to claim 25 or 26, *characterized in that* a context determination unit comprises a position unit adapted to determine a current position of the mobile device as operational context.
- 25 28. Handover assisting unit according to one of the claims 25 to 27, *characterized in that* a context determination unit further comprises a movement prediction unit adapted to predict a movement of the
- 30 mobile device as operational context.

29. Handover assisting unit according to claim 28,
characterized in that the movement prediction unit is
adapted to predict a movement of the mobile device
according to a movement path.

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30. Handover assisting unit according to claim 28 or 29,
characterized in that the movement prediction unit is
adapted to predict a movement of the mobile device
according to a movement speed.

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31. Handover assisting unit according to one of the claims
25 to 30, *characterized in that* the context
determination unit further comprises an application
profile unit adapted to determine the operational
context as a profile of applications being executed in
the mobile device before or at the time of pro-active
deployment of the handover decision mechanism.

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32. Handover assisting unit according to claim 31,
characterized in that the application profile unit is
adapted to determine the profile of applications in
relation to a group comprising video, still image,
audio, text, and speech applications.

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33. Handover assisting unit according to claim 31,
characterized in that the application profile unit is
adapted to determine the profile of applications in
relation to a group comprising a group comprising
interactive, point-to-point, one-way and/or multipoint
applications.

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34. Handover assisting unit according to one of the claims 25 to 33, *characterized in that* the context determination unit further comprises an user profile unit adapted to determine the operational context of the mobile device as a profile of at least one mobile device user.

35. Handover assisting apparatus according to one of the claims 26 to 34, *characterized in that* the access point determination unit comprises a candidate access point determination unit adapted to identify at least one candidate access point as input to the handover decision mechanism.

36. Handover assisting apparatus according to claim 35, *characterized in that* the candidate access point determination unit is adapted to identify the at least one candidate access point using existing handover mechanisms.

37. Handover assisting apparatus according to claim 35 or 36, *characterized in that* the candidate access point determination unit is adapted to rank candidate access points according to dynamic criteria.

38. Handover assisting apparatus according to claim 37, *characterized in that* the candidate access point determination unit is adapted to rank candidate access points according to dynamic criteria selected from a group comprising signal strength, bandwidth, supported

applications, quality of service, network usage, power consumption.

5 39. Handover assisting apparatus according to one of the claims 25 to 38, *characterized in that* the context determination unit further comprises a handover type determination unit adapted to select a handover type.

10 40. Handover assisting apparatus according to claim 39, *characterized in that* the handover type determination unit is adapted to select a network assisted hand over.

15 41. Handover assisting apparatus according to claim 39, *characterized in that* the handover type determination unit is adapted to select a mobile device assisted hand over.

20 42. Handover assisting apparatus according to claim 39, *characterized in that* the handover type determination unit is adapted to select a combined network assisted and mobile device assisted hand over.

25 43. Handover assisting apparatus according to one of the claims 25 to 42, *characterized in that* the proactive deployment unit is adapted to deploy the handover decision mechanism through transfer of code data achieving the determination of the at least one new access point for the mobile device.

44. Handover assisting apparatus according to one of the claims 25 to 43, *characterized in that* the proactive deployment unit is adapted to deploy the handover decision mechanism through transfer of criteria for the at least one new access point.
45. Handover assisting apparatus according to claim 44, *characterized in that* the proactive deployment unit is adapted to transfer criteria according to a data structure.
46. Handover assisting apparatus according to one of the claims 25 to 45, *characterized in that* the proactive deployment unit is adapted to un-deploy the handover decision mechanism when it is no more relevant.
47. Handover assisting apparatus according to one of the claims 25 to 44, *characterized in that* handover is assisted according to a standard selected from a group comprising GSM, PDC, GPRS, PPP, HSCSD, WLAN, HiperLAN, IrDa, Bluetooth, IS 45, IS 95, IMT 2000.
48. A computer program product directly loadable into the internal memory of a mobile communication unit, comprising software code portions for performing the steps of one of the claims 1 to 24, when the product is run on a processor of the mobile communication unit.